

WHAT IS CLAIMED IS:

- 1 1. A plurality of chip devices comprising:
2 a plurality of bottom leadframes each including a plurality of leads;
3 a plurality of bumped dies, each bumped die being on a corresponding
4 bottom leadframe and including a source and gate solder bump array;
5 a plurality of top leadframes, each top leadframe being coupled to a
6 corresponding bumped die and including a plurality of leads; and
7 four rails, a first rail being connected to a first side of each of the top
8 leadframes, a second rail being connected to a second side of each of the top leadframes,
9 a third rail being connected to a first side of each of the bottom leadframes, and a fourth
10 rail being connected to a second side of each of the bottom leadframes;
11 wherein each bottom leadframe has leads coupled to drain terminals on its
12 corresponding bumped die;
13 wherein each top leadframe has a lead coupled to a gate terminal on its
14 corresponding bumped die and leads coupled to source terminals on its corresponding die;
15 and
16 wherein the first rail is coupled to the third rail and the second rail is
17 coupled to the fourth rail.
- 1 2. An arrangement in accordance with claim 1 wherein the solder
2 bumps consist of one of Pb-Sn, Pb-Sn-Ag or Sn-Sb.
- 1 3. An arrangement in accordance with claim 1 wherein the leads are
2 coupled to the gate terminal and the source terminals via pads.
- 1 4. An arrangement in accordance with claim 1 further comprising a
2 plurality of molded bodies, each body encapsulating a portion of a corresponding top
3 leadframe and a corresponding bottom leadframe, and a corresponding bumped die
4 therebetween.
- 1 5. An arrangement in accordance with claim 1 wherein the chip
2 devices are DMOS devices.

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1 6. An arrangement in accordance with claim 1 wherein the top
2 leadframes include slots defined therein.

1 7. A method of making a chip device, the method comprising:
2 providing a plurality of bottom leadframes coupled to one another with a
3 pair of rails;
4 attaching a corresponding bumped die including a source and gate solder
5 bump array to each bottom leadframe;
6 providing a plurality of top leadframes coupled to one another with a pair
7 of rails; and
8 flipping the plurality of top leadframes such that each top leadframe
9 contacts the solder bumps on a corresponding bumped die,.

1 8. A method in accordance with claim 7 further comprising placing a
2 molded body around each top and bottom leadframe with a corresponding bumped die
3 therebetween.

1 9. A method in accordance with claim 7 further comprising spot
2 welding a rail of the bottom leadframe and a rail of the top leadframe together.

1 10. A method in accordance with claim 9 further comprising reflowing
2 the solder bumps.

1 11. A method in accordance with claim 7 further comprising
2 pressfitting a rail of the bottom leadframe and a rail of the top leadframe together.

1 12. A method in accordance with claim 11 further comprising
2 reflowing the solder bumps.

1 13. A method in accordance with claim 7 wherein the bumped die is
2 attached to the bottom leadframe with an adhesive, the adhesive being cured sometime
3 during the method after the die is attached thereto.

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1 14. A method in accordance with claim 7 wherein the bumped die is
2 attached to the bottom leadframe with soft solder.

1 15. A method of making a plurality of chip devices, the method
2 comprising:
3 providing a plurality of top leadframes coupled to one another with a pair
4 of rails;
5 flipping a bumped die including a source and gate solder bump array on
6 each top leadframe such that each bumped die contacts the gate and source pads of
7 topframe; and
8 providing a plurality of bottom leadframes being coupled to one another
9 with a pair of rails;
10 flipping the top leadframes onto the plurality of bottom leadframes such
11 that a bumped die is between each top leadframe and a corresponding bottom leadframe.

1 16. A method in accordance with claim 15 further comprising placing a
2 molded body around each top and bottom leadframe with a corresponding bumped die
3 therebetween.

1 17. A method in accordance with claim 15 further comprising spot
2 welding a rail of the bottom leadframe and a rail of the top leadframe together.

1 18. A method in accordance with claim 17 further comprising
2 reflowing the solder bumps.

1 19. A method in accordance with claim 15 further comprising
2 pressfitting a rail of the bottom leadframe and a rail of the top leadframe together.

1 20. A method in accordance with claim 19 further comprising
2 reflowing the solder bumps.

1 21. A method in accordance with claim 15 wherein the die is attached
2 to the bottom leadframe with soft solder.

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1 22. A method in accordance with claim 15 wherein the die is attached
2 to the bottom leadframe with an adhesive, the adhesive being cured sometime during the
3 method after the die is attached thereto.

1 23. A method of making a plurality of chip devices, the method
2 comprising:
3 providing a plurality of top leadframes coupled to one another with a pair
4 of rails;
5 providing a plurality of bottom leadframes coupled to one another with a
6 pair of rails, each bottom leadframe including a die attach pad;
7 placing a bumped die including a source and gate array on each die attach
8 pad of each bottom leadframe; and
9 coupling the top and bottom leadframe rails together such that each
10 bumped die contacts the solder bumps of a corresponding top leadframe.

1 24. A method in accordance with claim 23 further comprising placing a
2 molded body around each top and bottom leadframe with a corresponding bumped die
3 therebetween.

1 25. A method in accordance with claim 23 further comprising spot
2 welding the rails of the bottom leadframe and the rails of the top leadframe together.

1 26. A method in accordance with claim 25 further comprising
2 reflowing the solder bumps.

1 27. A method in accordance with claim 23 further comprising
2 pressfitting the rails of the bottom leadframe and the rails of the top leadframe together.

1 28. A method in accordance with claim 27 further comprising
2 reflowing the solder bumps.

1 29. A method in accordance with claim 23 wherein each bumped die is
2 attached to the bottom leadframe with an adhesive, the adhesive being cured sometime
3 during the method after the die is attached thereto.

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- 1 30. A method in accordance with claim 23 wherein each bumped die is
2 attached to the bottom leadframe with soft solder.

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